FLOOD INSURANCE STUDY

TOWN OF CANTON, CONNECTICUT
HARTFORD COUNTY

REVISED

MARCH 18, 1991

Federal Emergency Management Agency

COMMUNITY NUMBER 090135

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program (NFIP) have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by the Letter of Map Revision (LOMR) process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS components.

Initial Flood Insurance Study Effective Date: February 1979
(Flood Insurance Rate Map Dated: August 1, 1979)

Flood Insurance Study Revised: March 18, 1991

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1
	1.1 Purpose of Study	1
	1.2 Authority and Acknowledgments	1
	1.3 Coordination	1
2.0	AREA STUDIED	2
	2.1 Scope of Study	2
	2.2 Community Description	4
	2.3 Principal Flood Problems	5
	2.4 Flood Protection Measures	5
3.0	ENGINEERING METHODS	5
	3.1 Hydrologic Analyses	6
	3.2 Hydraulic Analyses	7
4.0	FLOODPLAIN MANAGEMENT APPLICATIONS	9
	4.1 Floodplain Boundaries	9
	4.2 Floodways	9
5.0	INSURANCE APPLICATIONS	16
6.0	FLOOD INSURANCE RATE MAP	17
7.0	OTHER STUDIES	18
8.0	LOCATION OF DATA	18
9.0	BIBLIOGRAPHY AND REFERENCES	18

TABLE OF CONTENTS - continued

Page

FIGURES

Figure 1 - Vicinity Map 3

Figure 2 - Floodway Schematic 10

TABLES

Table 1 - Summary of Discharges 6-7

Table 2 - Floodway Data 11-15

EXHIBITS

Exhibit 1 - Flood Profiles

Cherry Brook	Panels 01P-06P
Farmington River	Panels 07P-09P
Nepaug River	Panels 10P-11P
Rattlesnake Brook	Panels 12P-14P
East Branch Rattlesnake Brook	Panel 15P
Jim Brook	Panels 16P-17P
Barbour Brook	Panels 18P-20P

Exhibit 2 - Flood Insurance Rate Map Index and Street Index
Flood Insurance Rate Map

Exhibit 3 - Elevation Reference Marks

FLOOD INSURANCE STUDY
TOWN OF CANTON, HARTFORD COUNTY, CONNECTICUT

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study revises and updates a previous Flood Insurance Study/Flood Insurance Rate Map for the Town of Canton, Hartford County, Connecticut. This information will be used by the Town of Canton to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP). The information will also be used by local and regional planners to further promote sound land use and floodplain development.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the state (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses in this study represent a revision of the original analyses prepared by Anderson-Nichols, Inc., for the Federal Emergency Management Agency (FEMA), under Contract No. H-3862. The work for the original study was completed in October 1977.

In this revision, hydrologic and hydraulic analyses were prepared by the U. S. Geological Survey (USGS) for FEMA, under Inter-Agency Agreement No. EMW-85-E-1923, Project Order No. 3. The work for this revision was completed in May 1988.

1.3 Coordination

On December 6, 1984, an initial Consultation and Coordination Officer's (CCO) meeting was held with representatives from FEMA, the town and the USGS (the study contractor), to determine the streams to be studied by detailed methods.

During the course of this study, specific information was obtained on peak discharge-frequency relationships, flood control channel and dam improvements, previous flood hazard evaluations, recent and impending floodplain development, and the extent of past flooding. These data were discussed with local residents and community and state officials.

On March 23, 1990, a final CCO meeting was held with representatives from FEMA, the town, and the study contractor to review the results of the study.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Town of Canton, Hartford County, Connecticut. The area of study is shown on the Vicinity Map (Figure 1).

The following tabulation shows the limits of study for the streams studied by detailed methods.

Stream	Limits of Detailed Study
Cherry Brook	From its confluence with the Farmington River to a point approximately 1,584 feet upstream of State Route 179
Farmington River	From the downstream corporate limits to a point approximately 1,375 feet upstream of the upstream corporate limits
Nepaug River	From its confluence with the Farmington River to a point approximately 0.7 mile upstream of Powder Mill Road
Rattlesnake Brook	From its confluence with the Farmington River to East Hill Road
East Branch Rattlesnake Brook	From its confluence with Rattlesnake Brook to a point approximately 150 feet downstream of U. S. Routes 44 and 202
Jim Brook	From the downstream corporate limits to Lawton Road
Barbour Brook	From its confluence with Cherry Brook to Barbourtown Road

In this revision, Cherry Brook, the Farmington River, Rattlesnake Brook, Jim Brook, and Barbour Brook were restudied. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction through May 1993.

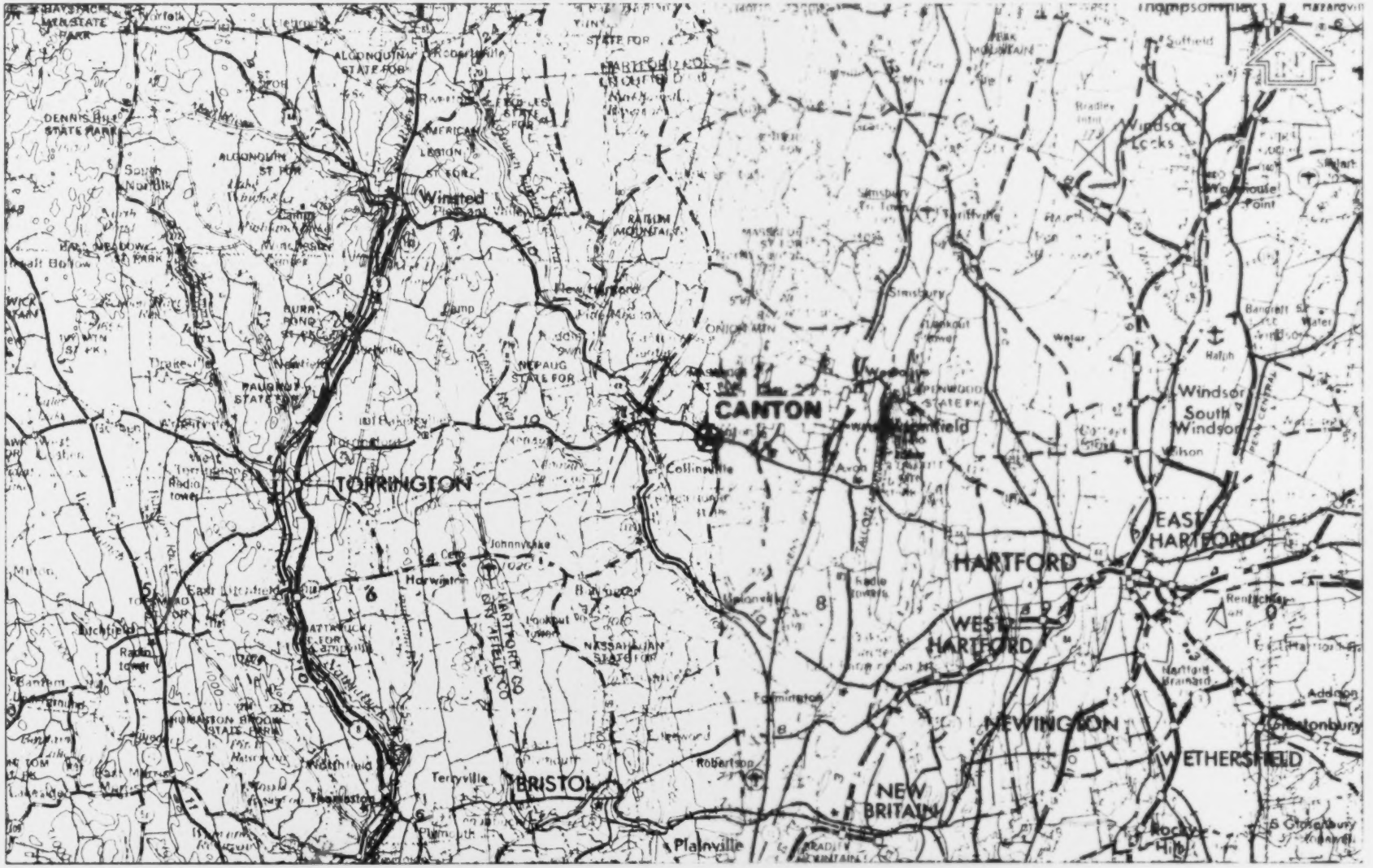


FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF CANTON, CT

(HARTFORD CO.)

APPROXIMATE SCALE

VICINITY MAP

The following flooding sources were studied by approximate methods: the Nepaug Reservoir and the remaining portions of Cherry Brook, East Branch Rattlesnake Brook, and Rattlesnake Brook. Areas of approximate study were generally terminated when 100-year floodplain widths narrowed to less than 200 feet. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and the Town of Canton.

2.2 Community Description

The Town of Canton is located in the western part of Hartford County in north-central Connecticut, along the Farmington River. It is bordered by the Town of New Hartford to the west, the Towns of Granby and Barkhamsted to the north, the Town of Simsbury to the east, and the Towns of Avon and Burlington to the south. The 1985 population of Canton was approximately 7,870, which yields a population density of approximately 315 persons per square mile (Reference 1).

Canton was settled in 1763 by the English. Before 1900, the town's economy was influenced by transportation routes, including the Albany Turnpike, the Farmington Canal, and the Connecticut Western Railroad. During the 20th century, real estate development in Canton has continually expanded because of the town's proximity to the industrial centers of New Britain and Hartford. The Collins Company, the oldest industry in Canton, has had a major impact on the town's growth and history, but in recent years other large businesses and industries have been established (Reference 1).

The climate of the Canton area is characterized by moderately warm summers, with temperatures averaging 73 degrees Fahrenheit (^{o}F) in July, and cool winters with temperatures averaging 27^{o}F in January. The average annual precipitation is 48 inches; 13-16 percent of this total falls in the form of snow. Precipitation is evenly distributed throughout the year (Reference 2).

The Farmington River is the major waterway in Canton. It flows toward the south from its headwaters in southwestern Massachusetts, through Canton, and on into Farmington. From Farmington, the river turns north toward Simsbury, where it again changes direction and flows east-southeast to its confluence with the Connecticut River in Windsor. Within the Town of Canton, the Farmington River flows toward the south-southeast from the Canton-New Hartford corporate limits through Collinsville, where it has a drainage area of 360 square miles, to the downstream study limit at the Avon and Burlington corporate limits. Rattlesnake Brook flows in a southern direction from its headwaters in central Canton to Dowd Avenue. From Dowd Avenue, the brook flows southwest to its confluence with the Farmington River, just southwest of State Route 179. East Branch Rattlesnake Brook flows south from its confluence with Rattlesnake Brook, and has a drainage area of 0.88 square mile. Cherry Brook enters Canton from Granby, and flows toward the south,

closely following State Route 179, to its confluence with the Farmington River just northwest of the intersection of State Routes 44 and 179. Barbour Brook flows from its headwaters in northwestern Canton toward the southeast, and it confluences with Cherry Brook just north of the intersection of Barbourtown Road and Cherry Brook Road. Jim Brook flows in a southern direction through the southeastern portion of the town, and empties into Secret Lake at Avon where it is known as Roaring Brook. Roaring Brook continues in a southern direction through Avon and joins the Farmington River at Farmington.

2.3 Principal Flood Problems

Extensive flooding from the Farmington River has occurred in the past. Flood-flow stages can rise from normal depths to extreme flood peaks in relatively short periods of time, with high velocities in the main channel of the Farmington River. In the past 50 years, six significant floods have occurred in the Farmington River basin, at the following times: November 1927, March 1936, September 1938, December 1948, August 1955, and October 1955. The August 1955 event is the flood of record for the upper part of the Farmington River in Canton. It was caused by successive storms of tropical origin; parts of the watershed received up to 16 inches of direct rainfall.

The smaller streams within Canton have some localized flooding problems. Capacity constraints at Thayer Avenue, Dowd Avenue, and Old Canton Road cause flooding along Rattlesnake Brook.

2.4 Flood Protection Measures

The Farmington River has no flood control structures within Canton, but it is controlled by storage reservoirs upstream of Canton. These reservoirs, under the direction of the New England Division of the U. S. Army Corps of Engineers (COE), reduce peak flows within the Town of Canton.

There are no State of Connecticut Channel Encroachment Lines along the Farmington River at Canton; however, the town has zoned the area along the Farmington River as a floodplain district, thus restricting development.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance,

respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each flooding source studied in detail affecting the community.

The peak discharge values for the Farmington River, obtained from the New England COE, included modifications reflecting upstream reservoirs and natural storage.

For the remaining streams studied by detailed methods, peak discharges were determined by a regression analysis. Discharges were related to basin characteristics such as drainage area, stream length, streambed slope, and rainfall parameters, as described in a statewide flow formula (Reference 3).

A summary of the drainage area-peak discharge relationships for the streams studied by detailed methods is shown in Table 1, "Summary of Discharges."

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
CHERRY BROOK					
At confluence with Farmington River	14.00	1,340	2,820	3,740	8,000
Above Barbour Brook	10.80	1,040	2,160	2,880	6,170
Above West Road	8.23	790	1,650	2,200	4,700
At Cherry Brook Road	4.06	390	800	1,080	2,320
FARMINGTON RIVER					
At downstream corporate limits	355.00	29,150	29,500	29,740	30,350

TABLE 1 - SUMMARY OF DISCHARGES continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
NEPAUG RIVER					
At confluence with the Farmington River	31.90	1,240	2,330	2,950	4,900
RATTLESNAKE BROOK					
At confluence with the Farmington River	3.41	365	760	990	2,100
Upstream of confluence of East Branch Rattlesnake Brook	2.53	210	445	585	1,275
Upstream of U. S. Routes 44 and 202	1.59	180	380	500	1,090
EAST BRANCH RATTLESNAKE BROOK					
At confluence with Rattlesnake Brook	0.88	90	190	240	520
At Dowd Avenue	0.34	35	70	90	190
JIM BROOK					
At Secret Lake	3.23	280	580	740	1,500
At golf course	2.19	210	445	585	1,275
At U. S. Routes 44 and 202	1.96	170	360	460	930
At Washburn Road	1.38	120	250	310	630
BARBOUR BROOK					
At confluence with Cherry Brook	1.66	360	790	1,090	2,700
Upstream of private road	1.29	280	610	840	2,080

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Cross section data for streams in the area were obtained by field measurements and aerial photogrammetry at a scale of 1:2,400 and a contour interval of 5 feet (Reference 4). Bridge plans were used to obtain elevation data and structural geometry. All bridges and culverts for which plans were unavailable were field surveyed. Cross sections were located in the field using standard USGS guidelines.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross-section locations are also shown on the Flood Insurance Rate Map (Exhibit 2).

Water-surface elevations of floods of the selected recurrence intervals were computed using the USGS step-backwater computer program (Reference 5). Starting water-surface elevations for the Farmington River were obtained from the adjacent downstream community of Avon. Starting elevations for the remaining streams studied by detailed methods were determined using critical depth calculations. Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

Channel roughness factors (Manning's "n") used in the hydraulic computations were assigned on the basis of engineering judgment and field observations of the streams and floodplains. The following tabulation shows the ranges of channel and overbank "n" values for the streams studied by detailed methods.

Stream	Channel "n"	Overbank "n"
Cherry Brook	0.035 - 0.040	0.050 - 0.080
Farmington River	0.033 - 0.040	0.055 - 0.080
Nepaug River	0.045 - 0.050	0.060 - 0.080
Rattlesnake Brook	0.040	0.060 - 0.080
East Branch Rattlesnake Brook	0.040	0.055 - 0.060
Jim Brook	0.035 - 0.040	0.060 - 0.080
Barbour Brook	0.040	0.050 - 0.060

Flood elevations for the areas studied by approximate methods were estimated using USGS flood prone area maps, aerial photographs, USGS topographic maps, and the Flood Hazard Boundary Map for the Town of Canton (References 6, 7, 8 and 9).

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps; the descriptions of the marks are presented in Elevation Reference Marks (Exhibit 3).

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each Flood Insurance Study provides 100-year flood elevations and delineations of the 100- and 500-year

floodplain boundaries and 100-year floodway to assist in developing floodplain management measures.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For the streams studied in detail, the 100- and 500-year floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:2,400 with a contour interval of 5 feet (Reference 4).

For the areas studied by approximate methods, the 100-year floodplain boundaries were delineated using the flood elevations obtained from the methods outlined in Section 3.2, and topographic maps (Reference 8).

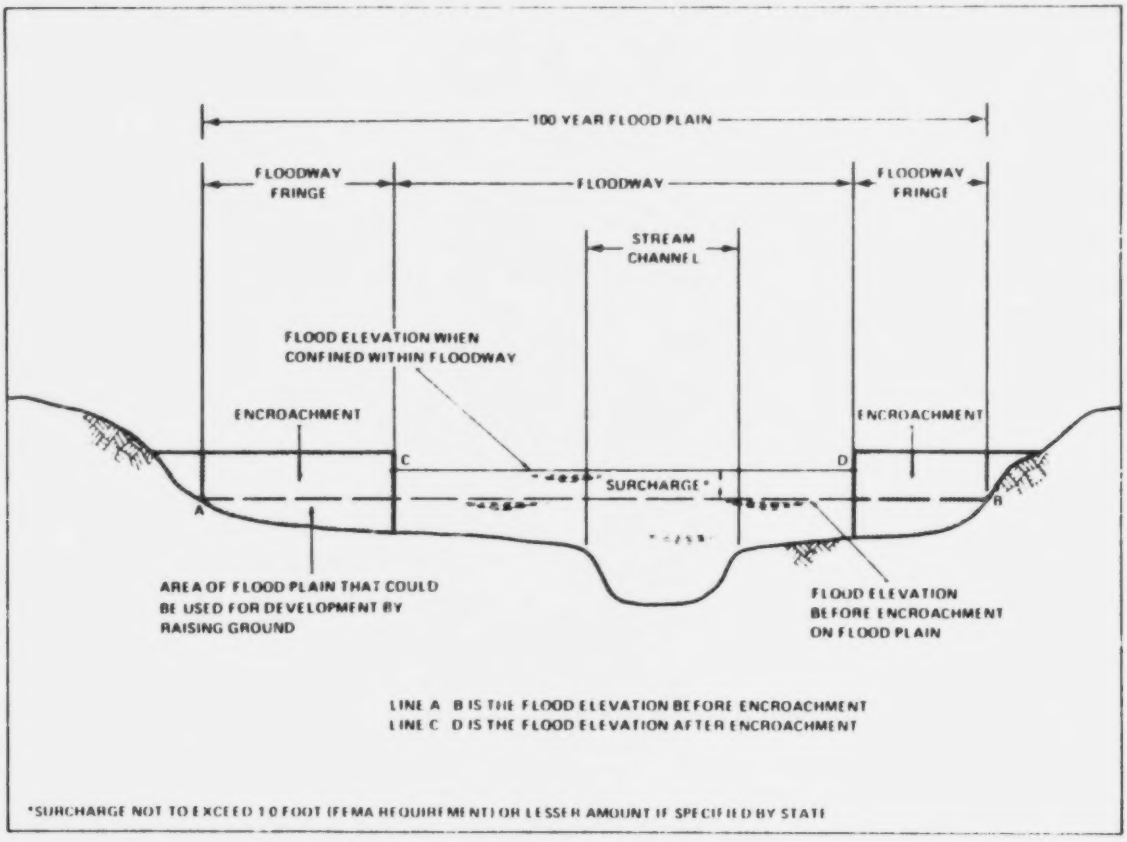
The 100- and 500-year floodplain boundaries are shown on the Flood Insurance Rate Map (Exhibit 2). On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE), and the 500-year floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 100- and 500-year floodplain boundaries are close together, only the 100-year floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as a minimum standard that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this study were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections (Table 2). The computed floodway is shown on the Flood Insurance Rate Map (Exhibit 2). In cases where the floodway and 100-year floodplain boundaries are either close together or collinear, only the floodway boundary is shown. Portions of the floodway widths for the Farmington River extend beyond the corporate limits.

The area between the floodway and 100-year floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 2.


100 YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE*
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE A B IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE C D IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE NOT TO EXCEED 1.0 FOOT (FEMA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE

FLOODWAY SCHEMATIC

Figure 2

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH FEET	SECTION AREA SQUARE FEET	MEAN VELOCITY FEET PER SECOND	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET NGVD			
Cherry Brook								
A	50	75	1,618	2.3	312.6	305.0[2]	305.0	0.0
B	1,200	215	460	8.1	317.7	317.7	317.7	0.0
C	2,070	164	613	6.1	325.5	325.5	325.5	0.0
D	2,650	84	399	9.4	329.0	329.0	329.0	0.0
E	3,240	54	290	12.9	334.7	334.7	334.7	0.0
F	3,970	137	455	8.2	344.9	344.9	344.9	0.0
G	4,800	359	468	8.0	356.8	356.8	356.8	0.0
H	6,010	116	457	8.2	367.0	367.0	367.0	0.0
I	7,170	52	306	12.2	378.5	378.5	378.5	0.0
J	7,520	132	440	8.5	384.0	384.0	384.0	0.0
K	7,569	121	1,486	2.5	388.4	388.4	388.4	0.0
L	8,540	85	630	5.9	388.6	388.6	388.7	0.1
M	9,380	84	440	8.5	390.8	390.8	391.0	0.2
N	9,502	169	663	5.6	392.1	392.1	392.1	0.0
O	10,500	228	643	5.8	396.3	396.3	396.3	0.0
P	10,560	590	4,318	0.9	402.9	402.9	402.9	0.0
Q	11,345	365	2,491	1.2	402.9	402.9	402.9	0.0
R	11,645	374	1,578	1.8	402.9	402.9	402.9	0.0
S	12,950	421	2,432	1.2	403.2	403.2	403.3	0.1
T	13,900	565	2,405	1.2	403.3	403.3	403.4	0.1
U	13,946	392	1,416	2.0	403.3	403.3	403.4	0.1
V	14,350	497	958	3.0	403.6	403.6	403.8	0.2
W	15,290	74	284	10.1	408.5	408.5	409.0	0.5
X	16,660	334	795	3.6	420.0	420.0	420.4	0.4
Y	17,820	221	320	6.9	439.2	439.2	439.2	0.0
Z	17,861	91	309	7.1	440.7	440.7	441.0	0.3

[1]Feet above confluence with Farmington River
[2]Elevation computed without consideration of backwater effects from Farmington River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF CANTON, CT
(HARTFORD CO.)

FLOODWAY DATA

CHERRY BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NAVD)			
Cherry Brook (continued)								
AA	18,995	42	185	11.9	455.7	455.7	455.7	0.0
AB	19,085	80	356	6.2	459.1	459.1	460.1	1.0
AC	19,295	57	213	10.3	464.1	464.1	464.1	0.0
AD	20,250	54	206	10.7	487.0	487.0	487.0	0.0
AE	21,520	78	228	9.7	517.6	517.6	517.6	0.0
AF	22,750	70	218	10.1	561.5	561.5	561.5	0.0
AG	23,720	127	291	7.6	581.0	581.0	581.5	0.5
AH	24,300	22	148	14.9	593.3	593.3	593.3	0.0
AI	24,350	25	209	10.5	595.9	595.9	595.9	0.0
AJ	24,850	140	461	4.8	600.6	600.6	600.6	0.0
AK	26,250	93	364	6.0	607.2	607.2	607.2	0.0
AL	27,715	172	320	6.9	623.7	623.7	623.7	0.0
AM	28,650	188	593	3.7	631.0	631.0	631.0	0.0
AN	28,672	221	925	2.4	631.5	631.5	631.5	0.0
AO	29,850	145	279	3.9	635.9	635.9	635.9	0.0
AP	30,500	165	320	3.4	639.9	639.9	639.9	0.0
AQ	31,735	80	319	3.4	642.7	642.7	643.2	0.5
AR	31,770	83	373	2.9	642.7	642.7	643.3	0.6
AS	32,230	46	217	5.0	643.2	643.2	643.8	0.6
AT	32,275	200	837	1.3	644.9	644.9	644.9	0.0
AU	33,200	25	97	11.2	647.1	647.1	647.5	0.4
AV	33,640	34	188	5.7	651.1	651.1	652.1	1.0
AW	34,550	120	251	4.3	656.1	656.1	656.2	0.1
AX	35,450	57	127	8.5	667.8	667.8	667.8	0.0
AY	35,520	90	298	3.6	672.2	672.2	672.2	0.0

[1]Feet above confluence with Farmington River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF CANTON, CT
(HARTFORD CO.)

FLOODWAY DATA

CHERRY BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH FEET	SECTION AREA SQUARE FEET	MEAN VELOCITY FEET PER SECOND	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NGVD)			
Cherry Brook (continued)								
AZ	37,050[1]	85	201	5.4	701.3	701.3	701.8	0.5
Farmington River								
A	766[2]	140	3,069	13.4	279.1	279.1	279.6	0.5
B	882[2]	170	3,232	12.7	282.4	282.4	282.4	0.0
C	2,186[2]	650	11,941	3.4	297.4	297.4	297.4	0.0
D	3,633[2]	350	4,374	9.4	297.4	297.4	297.4	0.0
E	4,224[2]	520	7,670	5.4	297.4	297.4	297.4	0.0
F	5,465[2]	424	4,807	8.5	298.3	298.3	298.4	0.1
G	8,545[2]	325	4,421	9.3	302.6	302.6	303.3	0.7
H	8,720[2]	306	4,852	8.5	303.5	303.5	304.2	0.7
I	10,050[2]	240	3,642	9.1	305.0	305.0	305.7	0.7
J	12,020[2]	389	4,195	7.9	308.6	308.6	309.6	1.0
K	12,470[2]	500	6,015	5.5	311.5	311.5	311.9	0.4
L	13,680[2]	382	4,254	7.8	313.0	313.0	313.7	0.7
M	14,400[2]	472	4,193	7.9	314.4	314.4	315.1	0.7
N	15,690[2]	190/100[3]	2,533	13.0	316.6	316.6	317.6	1.0
O	16,740[2]	430/100[3]	3,863	8.5	317.8	317.8	318.7	0.9
P	18,900[2]	310/90[3]	3,287	10.0	323.9	323.9	324.2	0.3
Q	20,300[2]	330/230[3]	3,449	9.6	328.0	328.0	328.0	0.0
R	22,670[2]	400/20[3]	4,407	7.5	333.1	333.1	333.6	0.5

[1]Feet above confluence with Farmington River
[2]Feet above corporate limits
[3]Width/width within corporate limits

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF CANTON, CT
(HARTFORD CO.)

FLOODWAY DATA

CHERRY BROOK - FARMINGTON RIVER

FLOODING SOURCE		FLOODWAY			WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NGVD)			
Nepaug River								
A	190[1]	59	881	3.35	304.8	303.7[3]	304.1	0.4
B	250[1]	95	1,142	2.58	304.8	304.3[3]	304.5	0.2
C	1,120[1]	62	267	11.06	315.9	315.9	316.1	0.2
D	1,430[1]	40	264	11.16	321.0	321.0	322.0	1.0
E	2,295[1]	40	221	13.34	341.1	341.1	341.2	0.1
F	3,075[1]	30	208	14.15	357.2	357.2	357.9	0.7
G	3,595[1]	40	221	13.34	371.3	371.3	371.5	0.2
Jim Brook								
A	125[2]	1,630	10,081	0.07	284.7	284.7	284.7	0.0
B	1,220[2]	1,281	5,525	0.09	284.7	284.7	284.7	0.0
C	2,110[2]	645	3,270	0.15	284.7	284.7	284.7	0.0
D	3,270[2]	18	53	8.62	284.7	284.7	284.7	0.0
E	3,850[2]	27	107	4.32	288.3	288.3	288.3	0.0
F	3,925[2]	49	160	2.88	289.1	289.1	289.1	0.0
G	4,730[2]	70	171	2.69	290.3	290.3	290.3	0.0
H	5,770[2]	156	109	4.22	296.2	296.2	296.3	0.1
I	6,440[2]	27	92	5.02	302.4	302.4	302.4	0.0
J	6,490[2]	72	225	2.04	303.3	303.3	303.3	0.0
K	7,170[2]	70	58	5.30	306.7	306.7	306.7	0.0
L	7,794[2]	15	36	8.72	326.9	326.9	326.9	0.0
M	7,950[2]	8	29	10.78	335.0	335.0	335.0	0.0
N	8,240[2]	30	87	3.55	338.1	338.1	338.1	0.0

[1]Feet above confluence with Farmington River
[2]Feet above corporate limits
[3]Elevation computed without consideration of backwater effects from Farmington River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF CANTON, CT
(HARTFORD CO.)

FLOODWAY DATA

NEPAUG RIVER - JIM BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NGVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Barbour Brook								
A	170	229	546	2.00	402.9	401.9[2]	402.9	1.0
B	1,205	124	166	6.57	409.4	409.4	409.4	0.0
C	1,230	245	715	1.52	412.6	412.6	412.6	0.0
D	1,770	42	124	8.81	415.5	415.5	416.1	0.6
E	2,440	27	117	9.30	428.6	428.6	429 5	0.9
F	2,985	38	119	9.18	447.8	447.8	447.8	0.0
G	3,005	105	402	2.71	449.3	449.3	449.4	0.1
H	4,530	34	97	8.63	483.4	483.4	483.9	0.5
I	5,360	22	83	10.18	503.7	503.7	504.5	0.8

[1]Feet above confluence with Cherry Brook
[2]Elevation computed without consideration of backwater effects from Cherry Brook

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF CANTON, CT
(HARTFORD CO.)

FLOODWAY DATA

BARBOUR BROOK

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore, "Without Floodway" elevations presented in Table 2 for certain downstream cross sections of Barbour Brook, Cherry Brook, and the Nepaug River are lower than the regulatory flood elevations in that area, which must take into account the 100-year flooding due to backwater from other sources.

Floodways were not computed for Rattlesnake Brook and East Branch Rattlesnake Brook because further encroachment would increase already-hazardous velocities.

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. The zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-depths derived from the detailed hydraulic analyses are shown within this zone.

Zone A99

Zone A99 is the flood insurance rate zone that corresponds to areas of the 100-year floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or depths are shown within this zone.

Zone V

Zone V is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no base flood elevations are shown within this zone.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 500-year floodplain, areas within the 500-year floodplain, and to areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

Zone D

Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 100- and 500-year floodplains. Floodways and the locations of selected cross sections used in the hydraulic analyses and floodway computations are shown where applicable.

7.0 OTHER STUDIES

Flood Insurance Studies have been prepared for the Towns of New Hartford, Simsbury, Avon, and Burlington (References 10, 11, 12 and 13). The results of this study are in exact agreement with the results of those studies.

Because it is based on more up-to-date analyses, this study supersedes the previously printed Flood Insurance Study for the Town of Canton (Reference 14).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting FEMA, the Natural and Technological Hazards Division, J. W. McCormack Post Office and Courthouse Building, Room 462, Boston, Massachusetts 02109.

9.0 BIBLIOGRAPHY AND REFERENCES

1. Connecticut State Register and Manual, Hartford, Connecticut, 1986.

2. State Geological and Natural History Survey of Connecticut, The Climate of Connecticut by Joseph J. Brumbach, Hartford, Connecticut, 1965.

3. L. A. Weiss, Flood Flow Formulas for Urbanized and Nonurbanized Areas of Connecticut, American Society of Civil Engineers, Watershed Management Symposium, New York, 1975, Revised 1977.

4. Connecticut Department of Transportation, Topographic Maps for the Relocation of U. S. Route 44 Salisbury to Avon, Scale 1:2,400, Contour Interval 5 Feet, April 12, 1970

5. U. S. Department of the Interior, Geological Survey, Open-File Report 76-499, Computer Applications for Step-Backwater and Floodway Analyses by James O. Shearman, Washington, D. C., 1976.

6. U. S. Department of the Interior, Geological Survey, 7.5-Minute Series Flood Prone Area Maps, Scale 1:24,000, Contour Interval 10 Feet: Avon, Connecticut, 1957; Collinsville, Connecticut, 1956; New Hartford, Connecticut, 1956; Tarriffville, Connecticut, 1956.

7. Connecticut Department of Transportation, Aerial Photographs, 1975.

8. U. S. Department of the Interior, Geological Survey, 7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 10 Feet: Avon, Connecticut, 1957, Photorevised, 1968; Collinsville, Connecticut, 1956, Photorevised 1968; New Hartford, Connecticut, 1956, Photorevised 1970; Tarriffville, Connecticut-Massachusetts, 1956, Photorevised 1970.

9. U. S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, Town of Canton, Hartford County, Connecticut, December 1976.

10. Federal Emergency Management Agency, Flood Insurance Study, Town of New Hartford, Hartford County, Connecticut, Washington, D. C., February 3, 1982.

11. Federal Emergency Management Agency, Flood Insurance Study, Town of Simsbury, Hartford County, Connecticut, Washington, D. C., April 15, 1986.

12. Federal Emergency Management Agency, Flood Insurance Study, Town of Avon, Hartford County, Connecticut, Washington, D. C., June 17, 1986.

13. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, Town of Burlington, Hartford County, Connecticut, Washington, D. C., June 1, 1981.

14. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, Town of Canton, Hartford County, Connecticut, Washington, D. C., February 1979 (Flood Insurance Rate Map dated August 1, 1979).

EXHIBIT 3 - ELEVATION REFERENCE MARKS

Reference Mark	FIRM Panel	Elevation (Feet NGVD)	Description of Location
RM 1	01	327.90	USC&GS bronze disk, stamped 754, set in concrete monument, top flush with ground, on southwest side of US Route 44 at its intersection with State Route 179 (Cherry Brook Road), approximately 1.5 miles southeast of Canton-New Hartford corporate limits; disk is located 4-foot bank, approximately 32.5 feet southwest of centerline of US Route 44, approximately 4 feet northwest of SNET pole No. 73, and approximately 45 feet southwest of south end of guard fence.
RM 2	01	295.94	Chiseled square on northeast corner of upstream headwall of State Route 179 bridge over Rattlesnake Brook.
RM 3	01	298.20	Chiseled square on sidewalk at south end of downstream side of Dyer Avenue bridge over Rattlesnake Brook.
RM 4	02	414.79	USC&GS bronze disk, stamped 1657, set in concrete monument approximately 3 inches below ground on east side of State Route 179 (Cherry Brook Road), approximately 1.3 miles northeast of its intersection with US Route 44, approximately 45.3 feet southeast of SNET pole No. 128, approximately 20.4 feet southeast of State Route 179 centerline, and between CT Power Co. pole No. 3050 and FVT Co. pole No. 127.
RM 5	02	385.0	Nail in base of 12-inch oak tree at intersection of Humphrey Road No. 2 and Humphrey Road No. 1, just east of Humphrey Road No. 2 bridge over Cherry Brook.
RM 6	02	399.66	Chiseled square on west end of upstream headwall of West Mountain Road bridge over Cherry Brook.
RM 7	02	400.72	Chiseled square on west end of downstream concrete bridge rail on Barbourtown Road bridge over Cherry Brook.

EXHIBIT 3 - ELEVATION REFERENCE MARKS - continued

Reference Mark	FIRM Panel	Elevation (Feet NGVD)	Description of Location
RM 8	02	404.80	Chiseled square on east end of upstream concrete bridge rail on Barbourtown Road bridge over Barbour Brook.
RM 9	04	325.67	Drill hole on south end of downstream headwall of Maple Avenue bridge over Rattlesnake Brook.
RM 10	04	335.81	USC&GS bronze disk, stamped 2436, set in concrete monument, approximately 3 inches above ground on northwest side of Maple Avenue, approximately 75 feet northeast of its intersection with Mills Lane, approximately 54.5 feet northeast of SNET pole No. 339, and approximately 19.2 feet northwest of centerline of Maple Avenue.
RM 11	04	336.49	Chiseled square on east end of downstream headwall of Dowd Avenue bridge over Rattlesnake Brook.
RM 12	04	336.15	Chiseled square on east end of bridge deck on upstream side of Old Canton Road bridge over Rattlesnake Brook.
RM 13	04	377.45	Chiseled square on west upstream wing wall of US Routes 44 and 202 bridge over Rattlesnake Brook.
RM 14	04	469.80	Chiseled square in center of downstream concrete bridge rail on East Hill Road bridge over Rattlesnake Brook, behind steel pole in wall.
RM 15	04	345.01	USC&GS bronze disk, stamped 723, flush with ground, set in concrete, approximately 17 feet south of Dowd Avenue centerline, approximately 0.5 mile west of its intersection with US Routes 44 and 202 at Canton green.
RM 16	04	338.88	Chiseled square on northeast upstream concrete wing wall of sidewalk on Dowd Avenue bridge over East Branch Rattlesnake Brook.

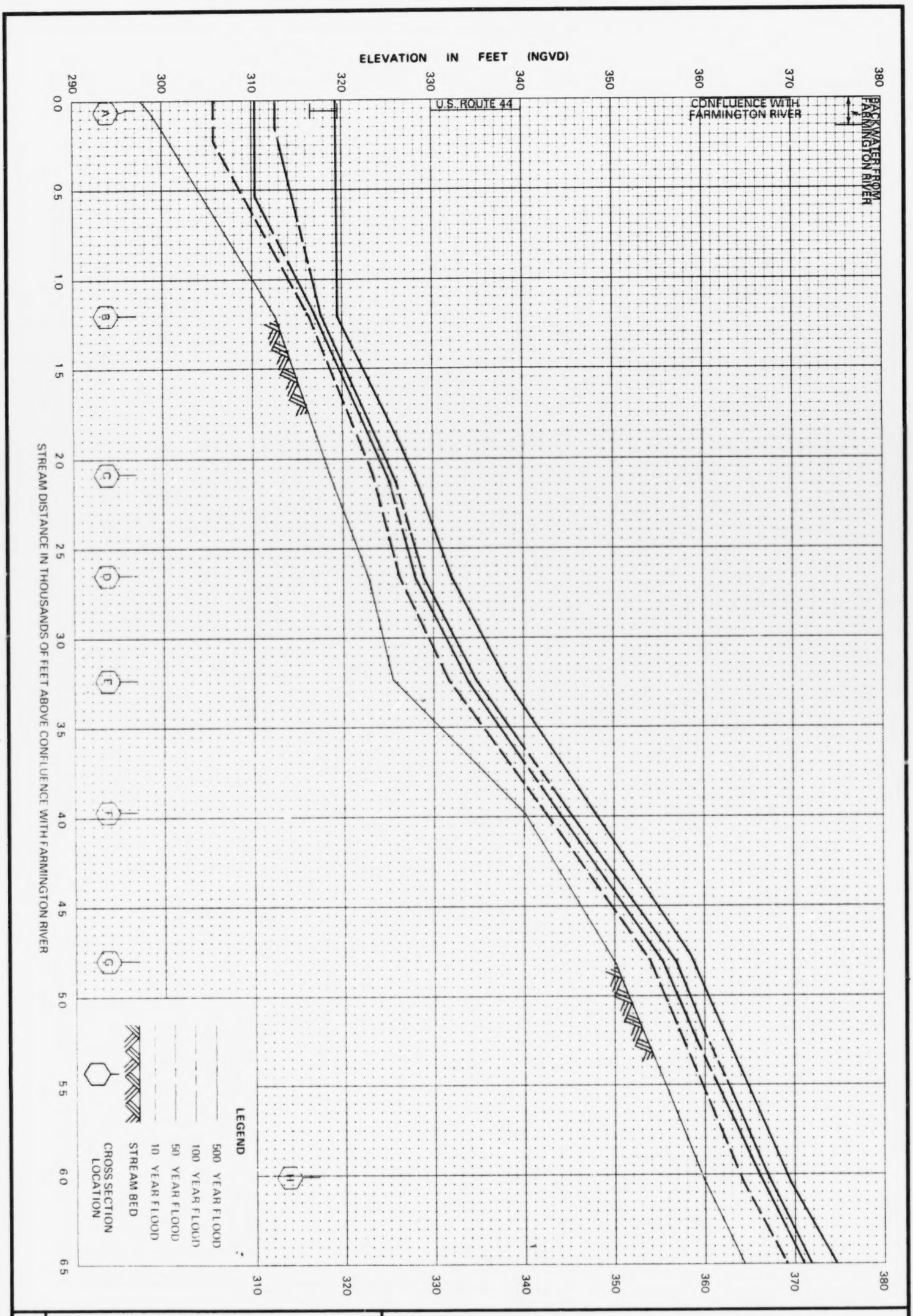
EXHIBIT 3 - ELEVATION REFERENCE MARKS - continued

Reference Mark	FIRM Panel	Elevation (Feet NGVD)	Description of Location
RM 17	04	333.95	USC&GS bronze disk, stamped 2438X, set in top of concrete monument, flush with ground in southeast corner of intersection of US Routes 44 and 202 and State Route 177, in front of Vincent Funeral Home, approximately 22 feet southwest of CT Light and Power pole No. 6644, and approximately 49.5 feet south of US Routes 44 and 202 centerline.
RM 18	04	303.78	Chiseled square in center of concrete downstream headwall of Washburn Road bridge over Jim Brook.
RM 19	04	342.77	Chiseled square on northwest corner of west end of upstream headwall of Lawton Road bridge over Jim Brook.
RM 20	05	403.74	Chiseled square on northwest corner of concrete bridge deck on Meadow Road bridge over Cherry Brook.
RM 21	05	445.30	Chiseled square on west end of upstream side of bridge deck on West Road bridge over Cherry Brook.
RM 22	05	608.34	Chiseled square in center of concrete bridge deck, on downstream edge of Wright Road bridge over Cherry Brook.
RM 23	05	645.99	USC&GS disk, stamped 1651, set in concrete monument, flush with ground on east side of State Route 179 (Cherry Brook Road), approximately 4.7 miles north of its intersection with US Route 44, approximately 24.3 feet east of the highway centerline, on lawn of North Canton Post Office, approximately 31.3 feet north of SNET pole No. 256, and partially underneath stone wall.
RM 24	06	701.79	USC&GS bronze disk, stamped 1650, set in concrete monument, flush with ground on south side of State Route 309 (West Simsbury Road), approximately 0.25 mile east of State Route 179, and approximately 18.85 feet southwest of highway centerline.

EXHIBIT 3 - ELEVATION REFERENCE MARKS - continued

Reference Mark	FIRM Panel	Elevation (Feet NGVD)	Description of Location
RM 25	06	689.15	USC&GS bronze disk, stamped 1648, set in concrete monument approximately 6 inches below ground on west side of State Route 179 (Cherry Brook Road), directly opposite Case Street, approximately 19.79 feet west of State Route 179 centerline.
RM 26	06	677.53	State Route 179 bridge over Cherry Brook, approximately 0.81 miles northwest of its intersection with Case Street.
RM 27	06	763.96	USC&GS disk, stamped 1646, set in top of concrete post, approximately 4 inches above ground on east side of State Route 179, approximately 13.9 feet southwest of FVT pole No. 443, and approximately 1,450 feet north of State Route 179 crossing over Cherry Brook.

☆ U.S. GOVERNMENT PRINTING OFFICE 1990-281-741/20430 Region 1



FEDERAL EMERGENCY MANAGEMENT AGENCY

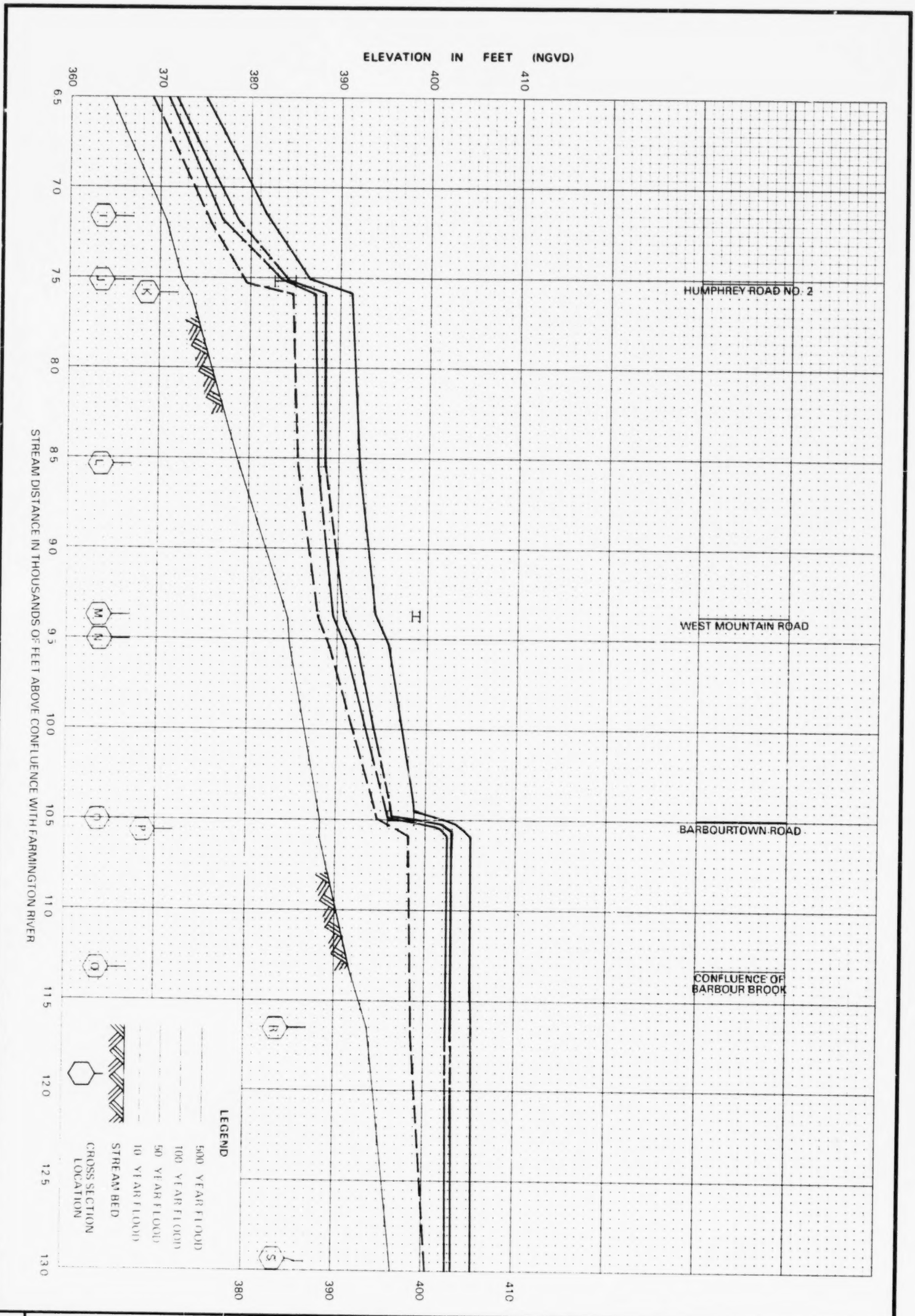
TOWN OF CANTON, CT

(HARTFORD CO.)

FLOOD PROFILES

CHERRY BROOK

01P



02P

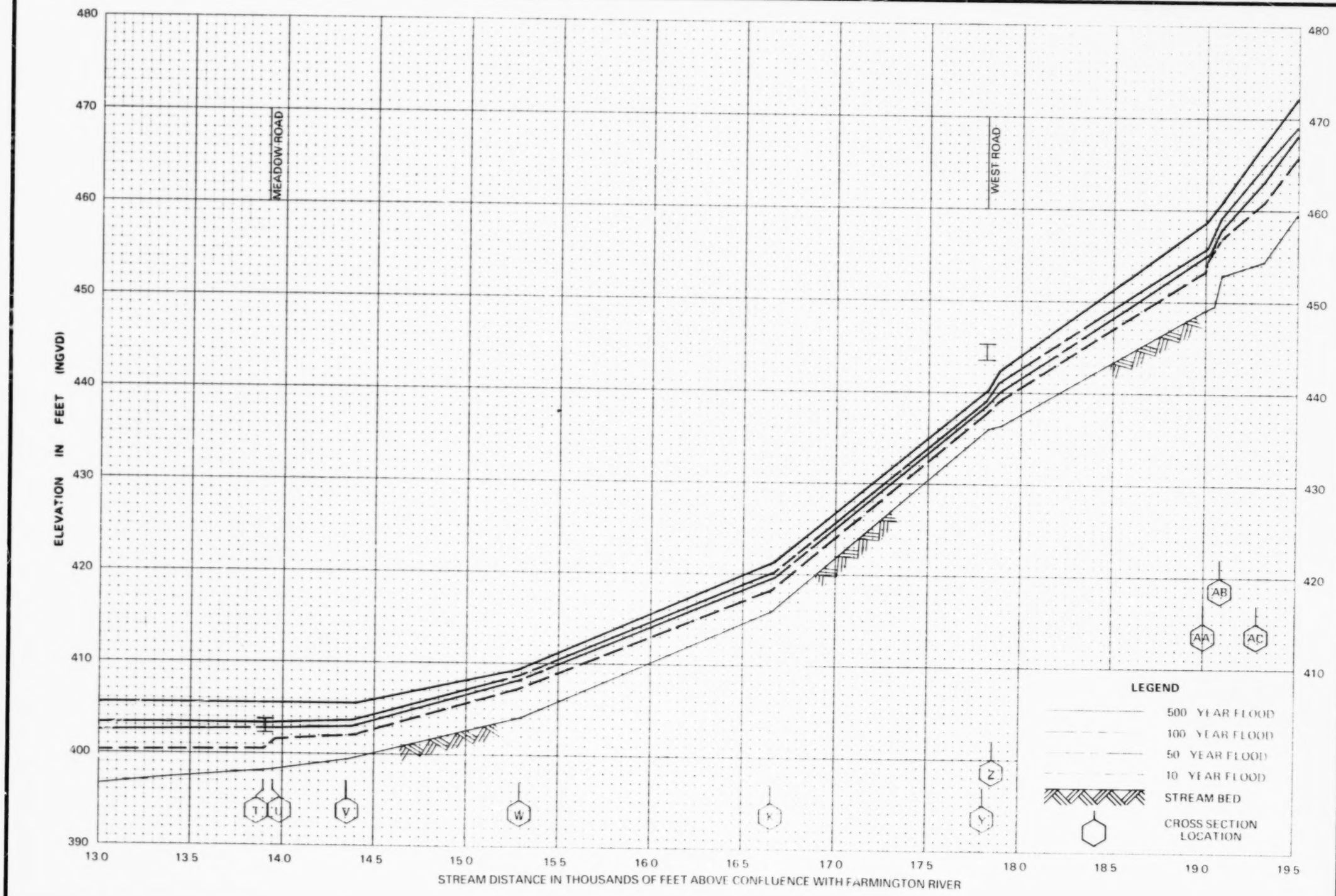
FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF CANTON, CT

(HARTFORD CO.)

FLOOD PROFILES

CHERRY BROOK



FLOOD PROFILES

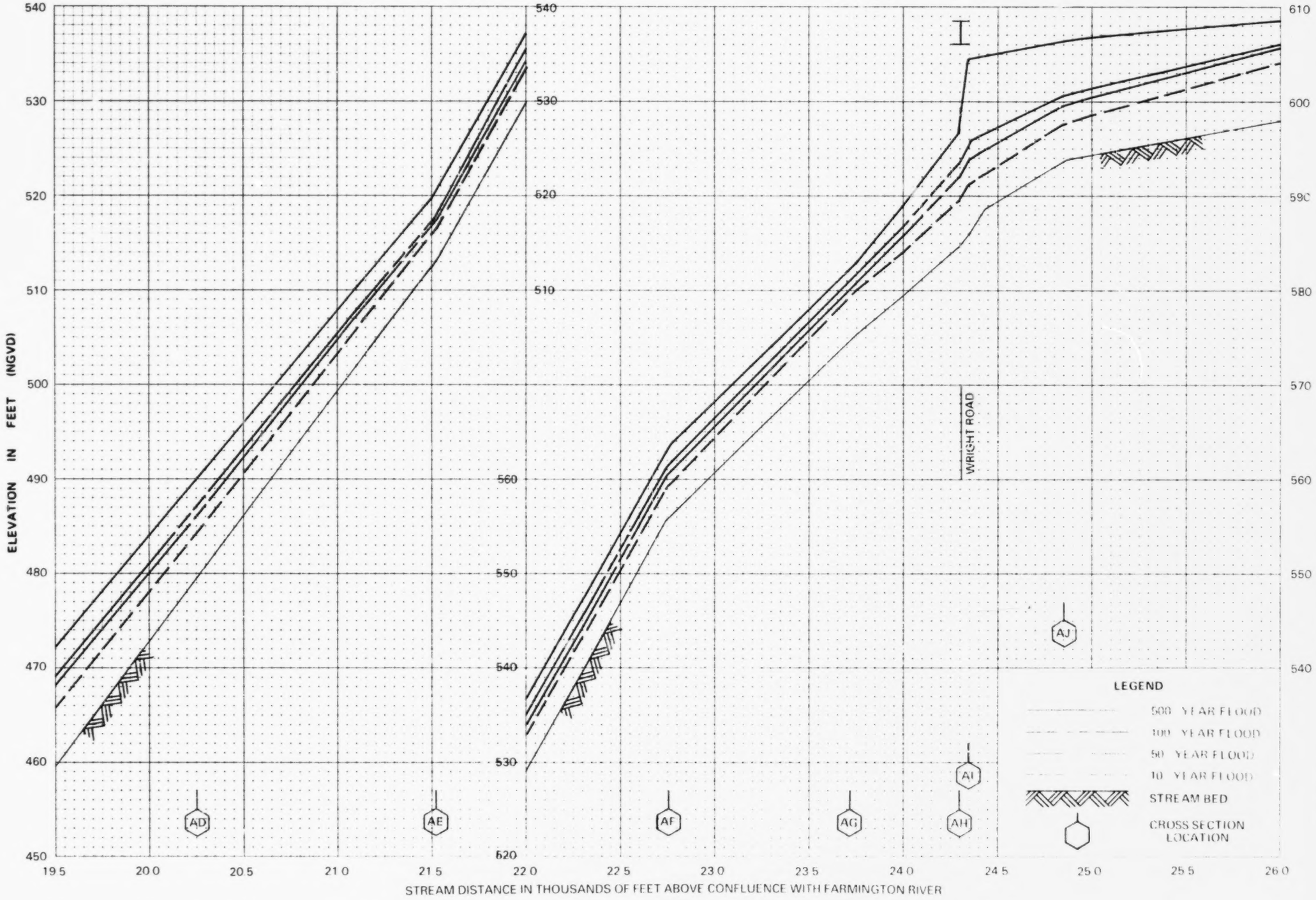
CHERRY BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF CANTON, CT

(HARTFORD CO.)

03P



FLOOD PROFILES

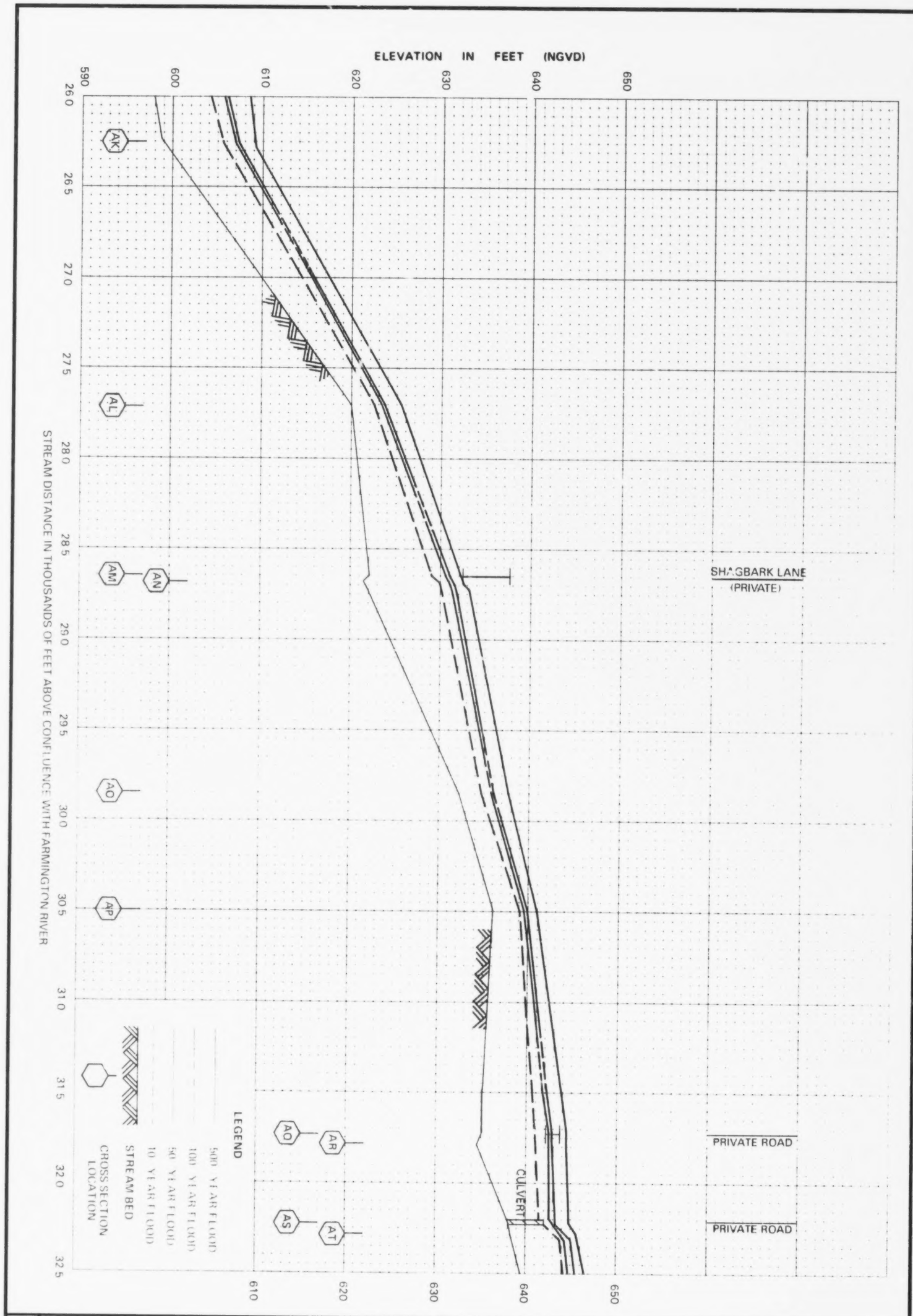
CHERRY BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF CANTON, CT

(HARTFORD CO.)

04P



FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF CANTON, CT

(HARTFORD CO.)

FLOOD PROFILES

CHERRY BROOK

05P

FLOOD PROFILES

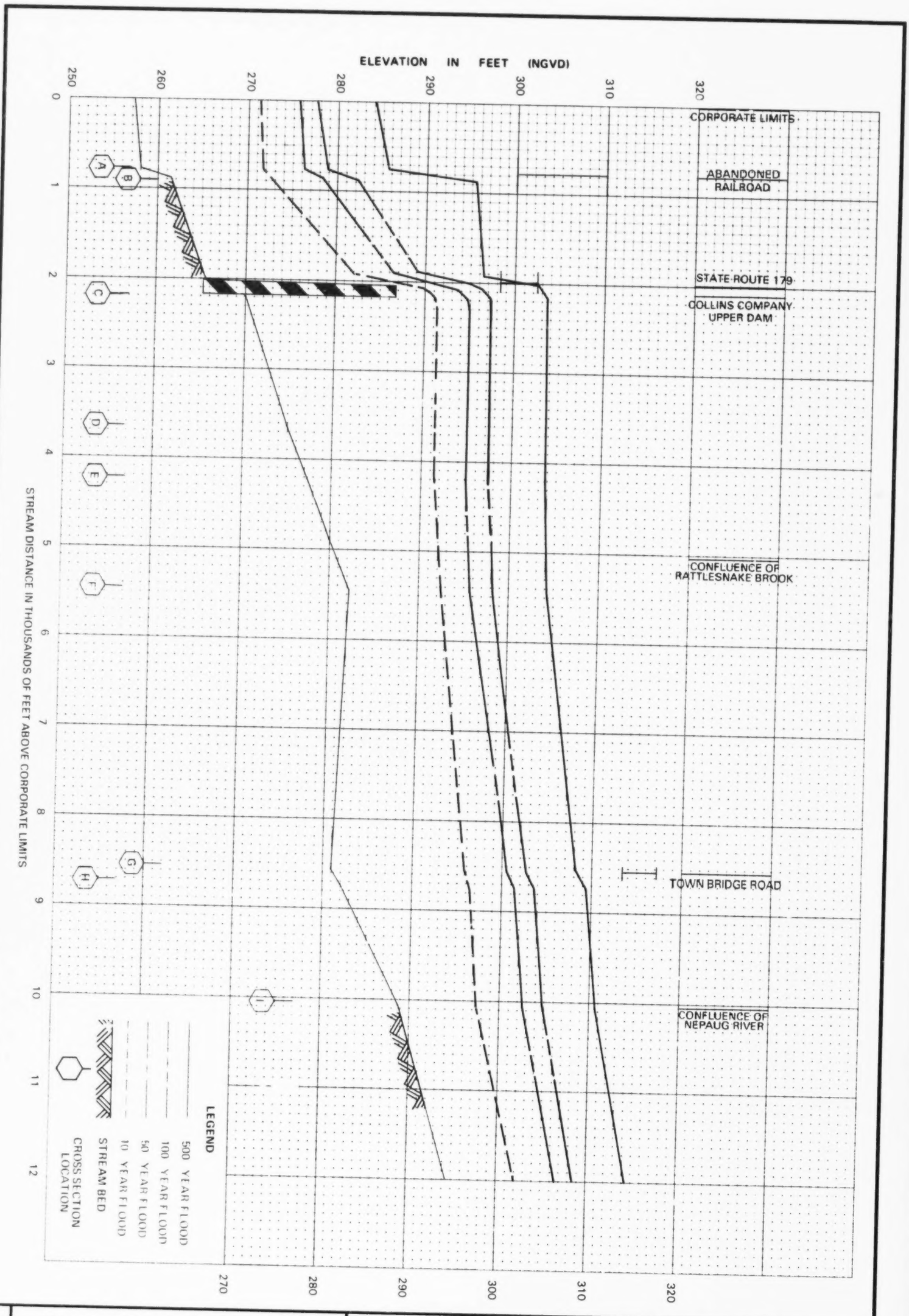
CHERRY BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF CANTON, CT

(HARTFORD CO.)

06P



07P	FEDERAL EMERGENCY MANAGEMENT AGENCY **TOWN OF CANTON, CT** (HARTFORD CO.)	**FLOOD PROFILES** **FARMINGTON RIVER**

FLOOD PROFILES

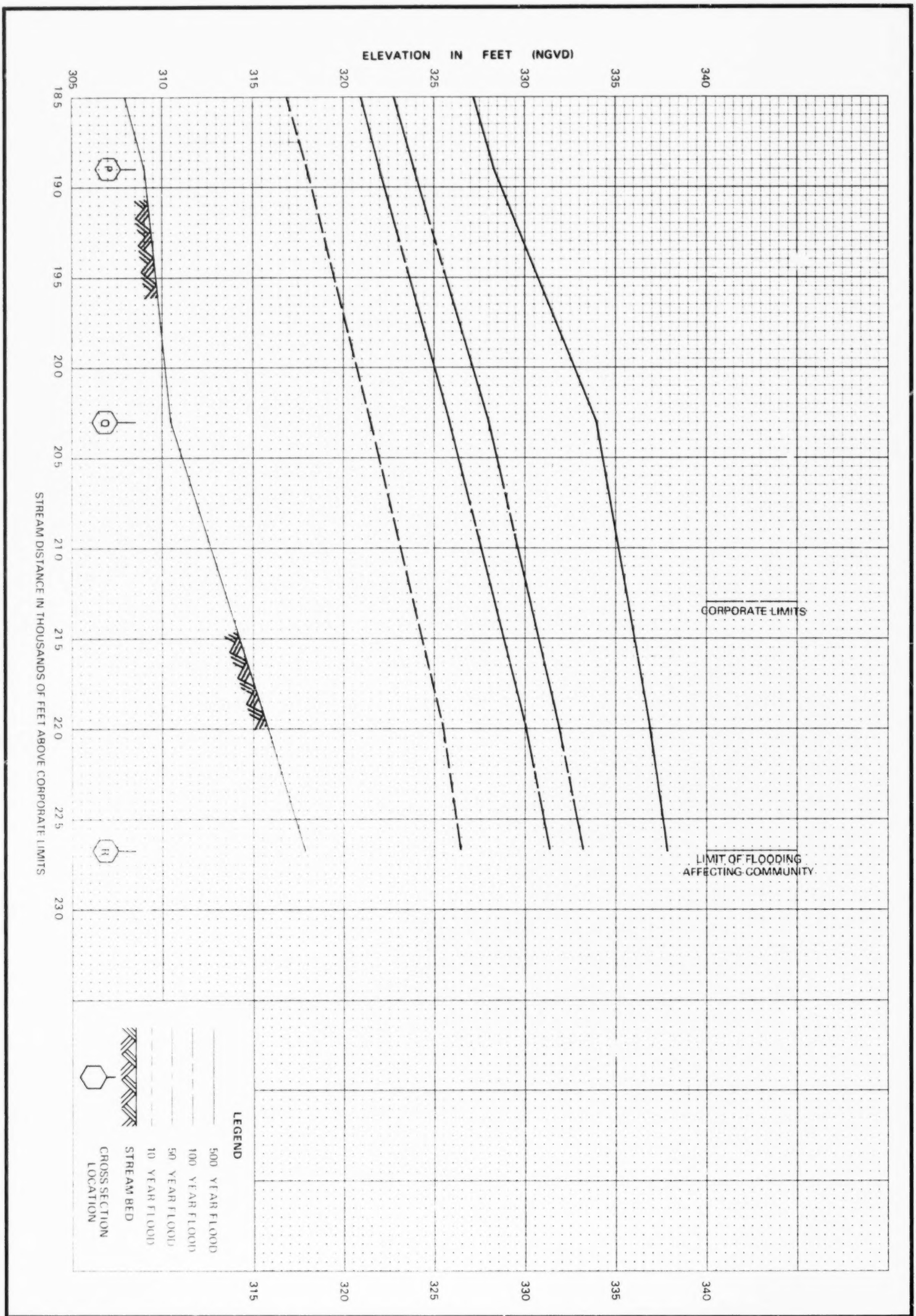
FARMINGTON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF CANTON, CT

(HARTFORD CO.)

08P



09P	FEDERAL EMERGENCY MANAGEMENT AGENCY **TOWN OF CANTON, CT** (HARTFORD CO.)	**FLOOD PROFILES** **FARMINGTON RIVER**

BACKWATER FROM FARMINGTON RIVER

CONFLUENCE WITH FARMINGTON RIVER

POWDER MILL ROAD

ELEVATION IN FEET (NGVD)

360
350
340
330
320
310
300
290

A B C D E

LEGEND

500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAMBED
CROSS SECTION LOCATION

00 25 50 75 100 125 150 175 200 250 275

STREAM DISTANCE IN HUNDREDS OF FEET ABOVE CONFLUENCE WITH FARMINGTON RIVER

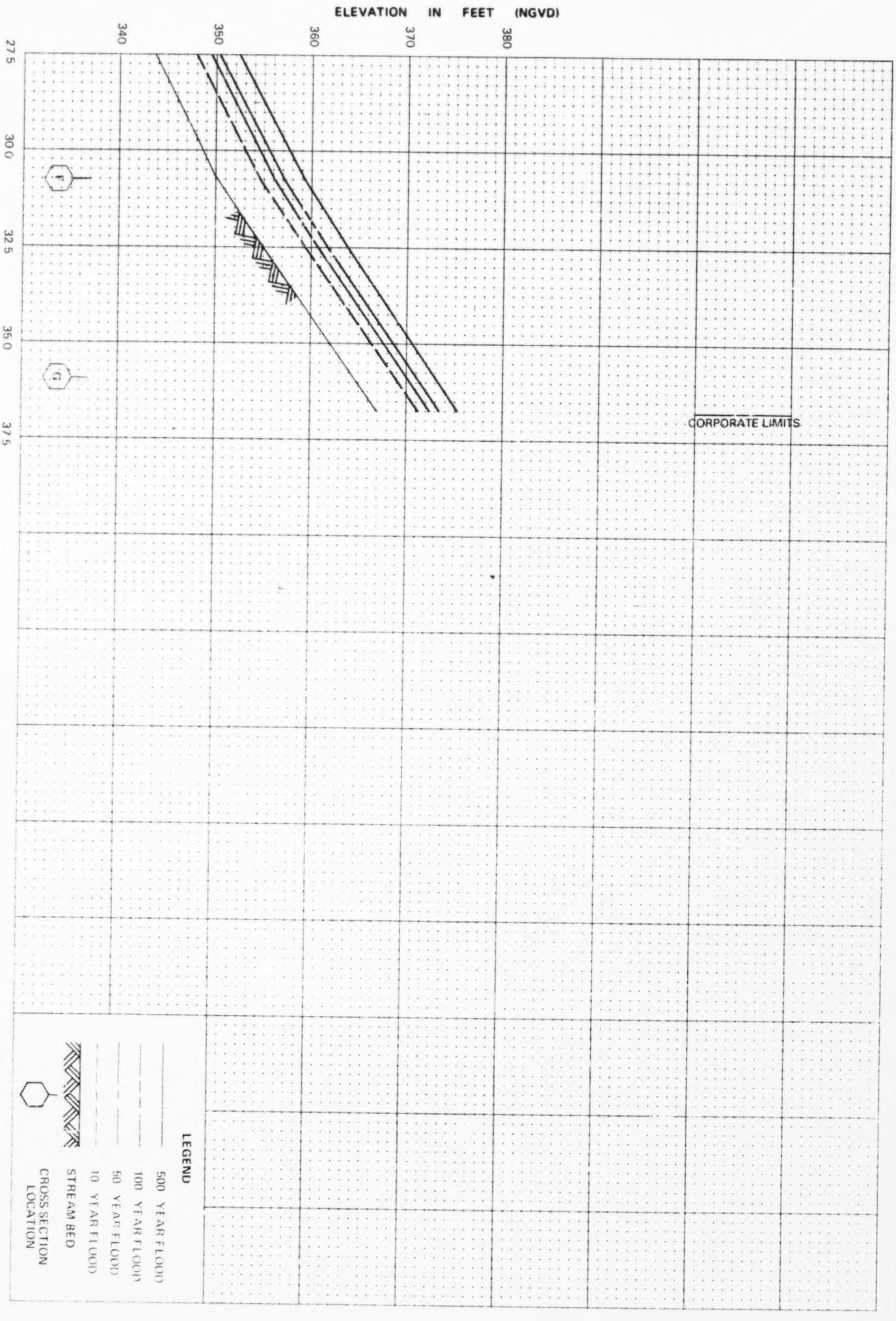
FLOOD PROFILES

NEPAUG RIVER

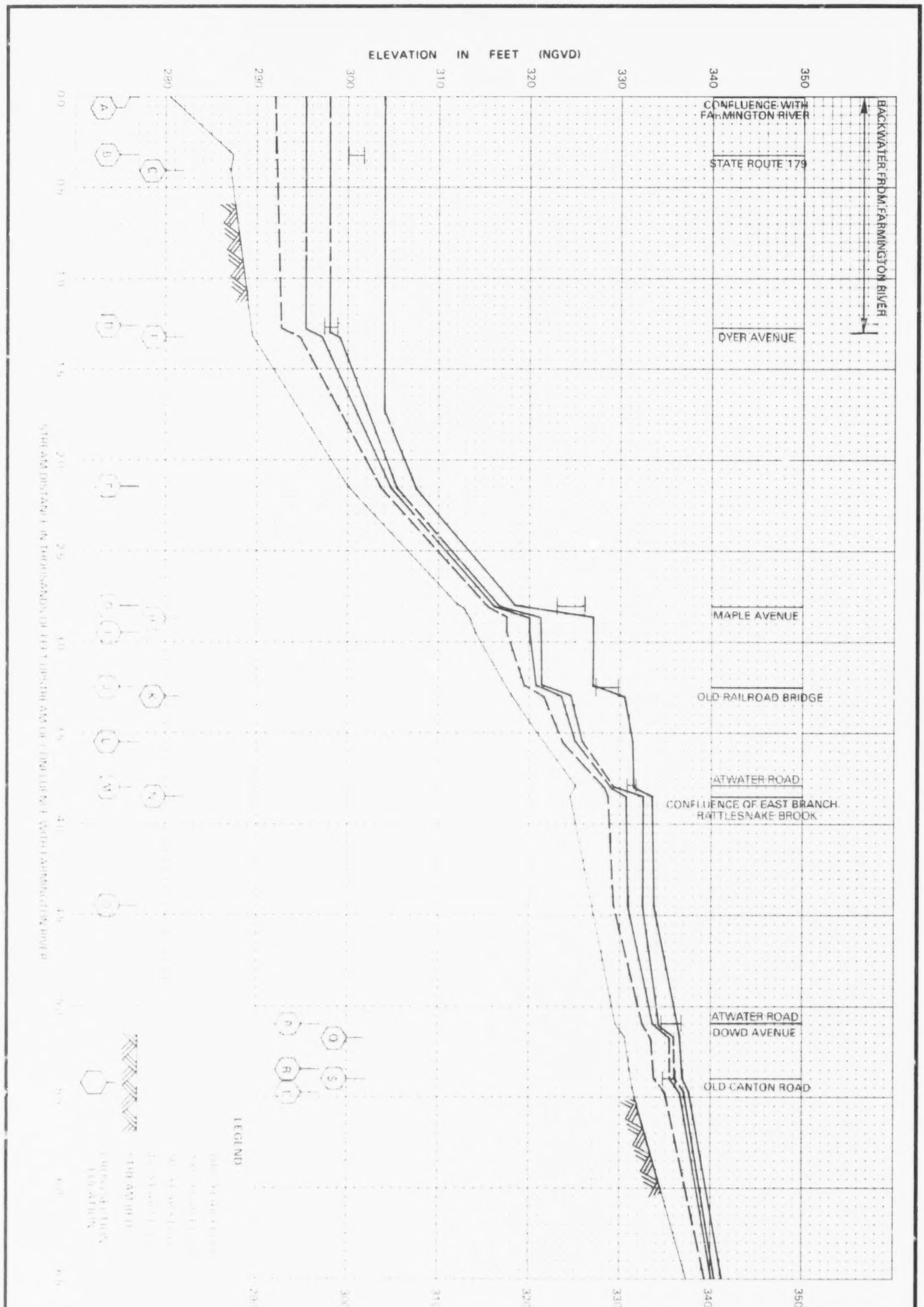
FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF CANTON, CT
(HARTFORD CO.)

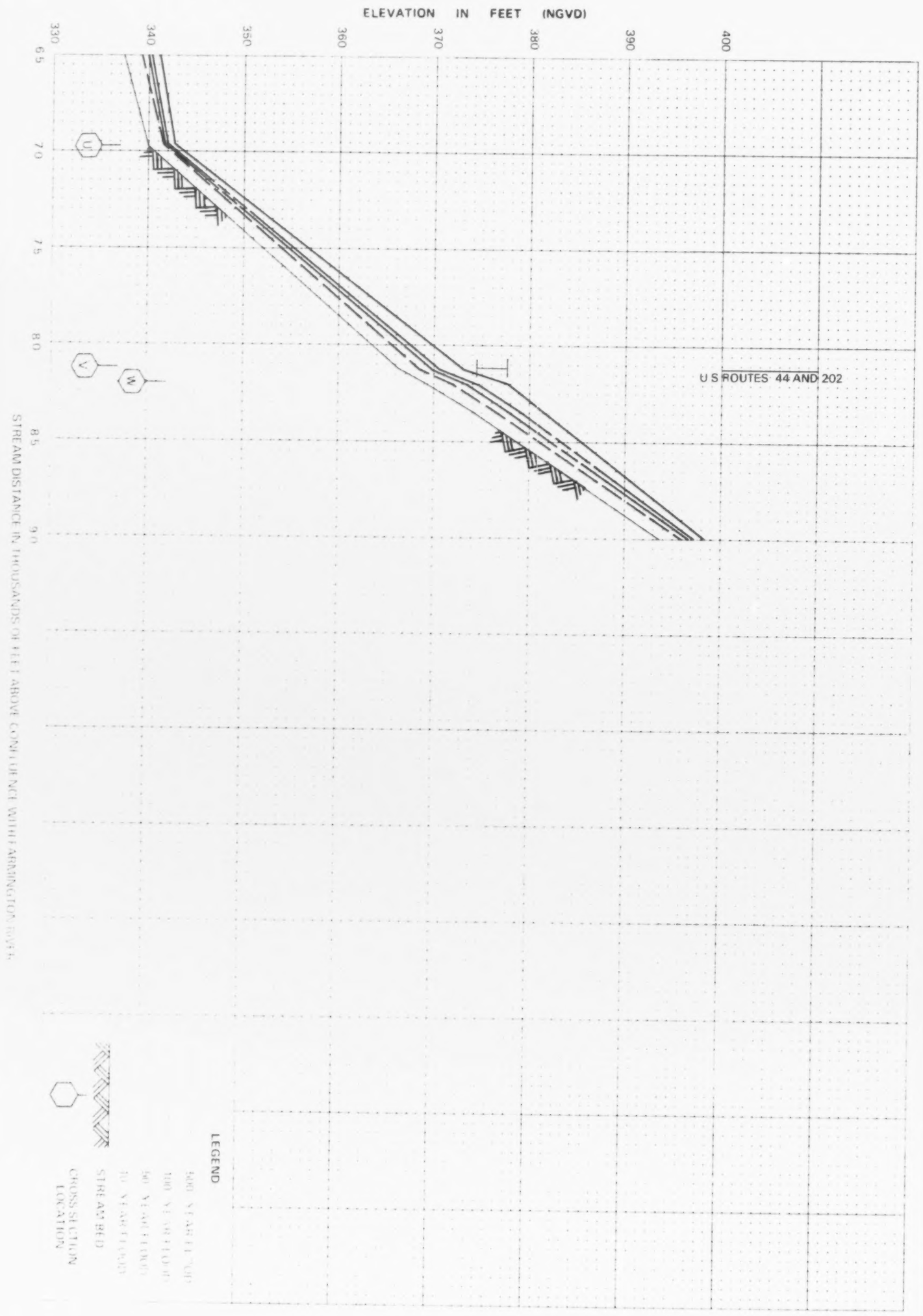
10P



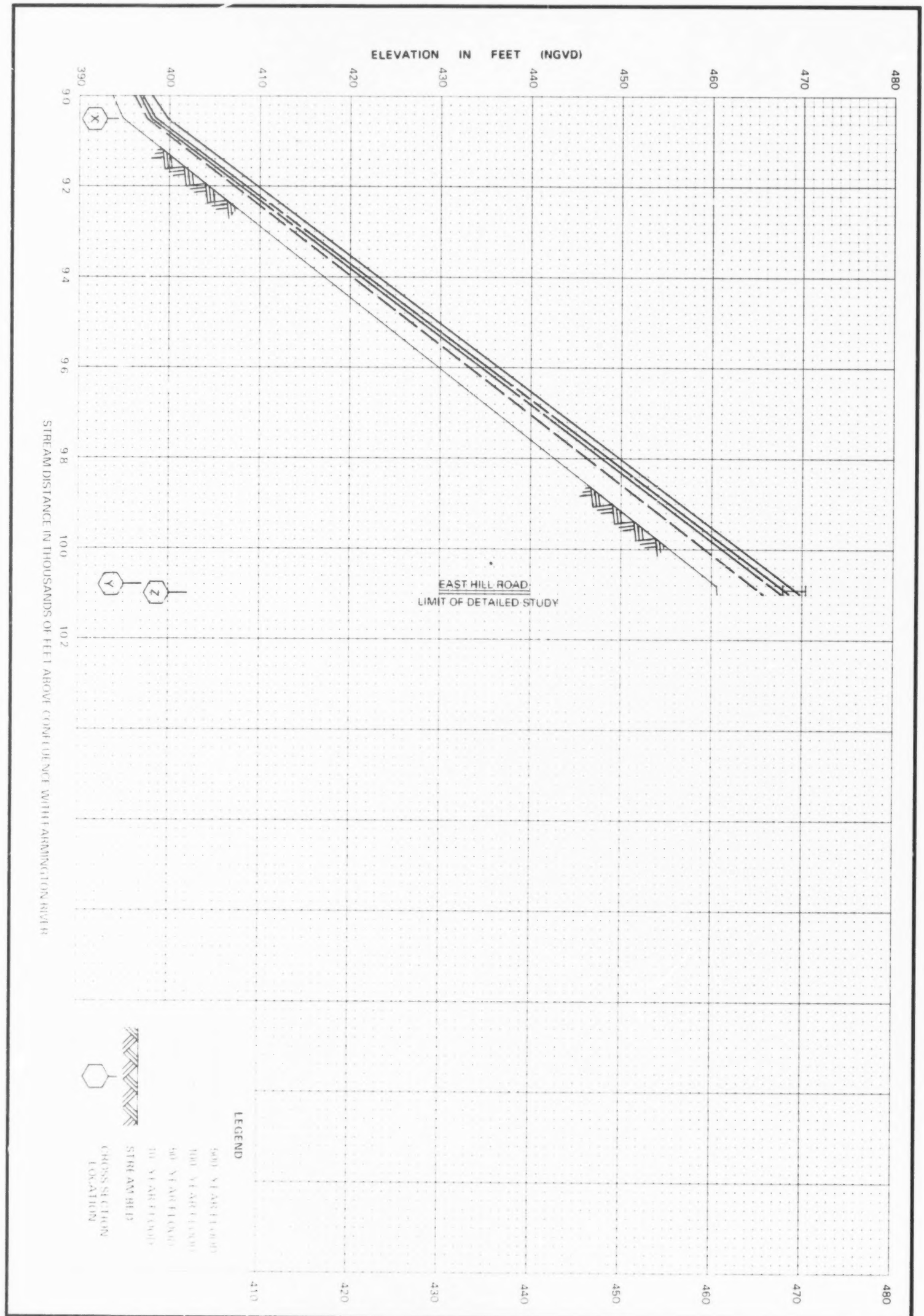
11P	FEDERAL EMERGENCY MANAGEMENT AGENCY **TOWN OF CANTON, CT** (HARTFORD CO.)	**FLOOD PROFILES** **NEPAUG RIVER**



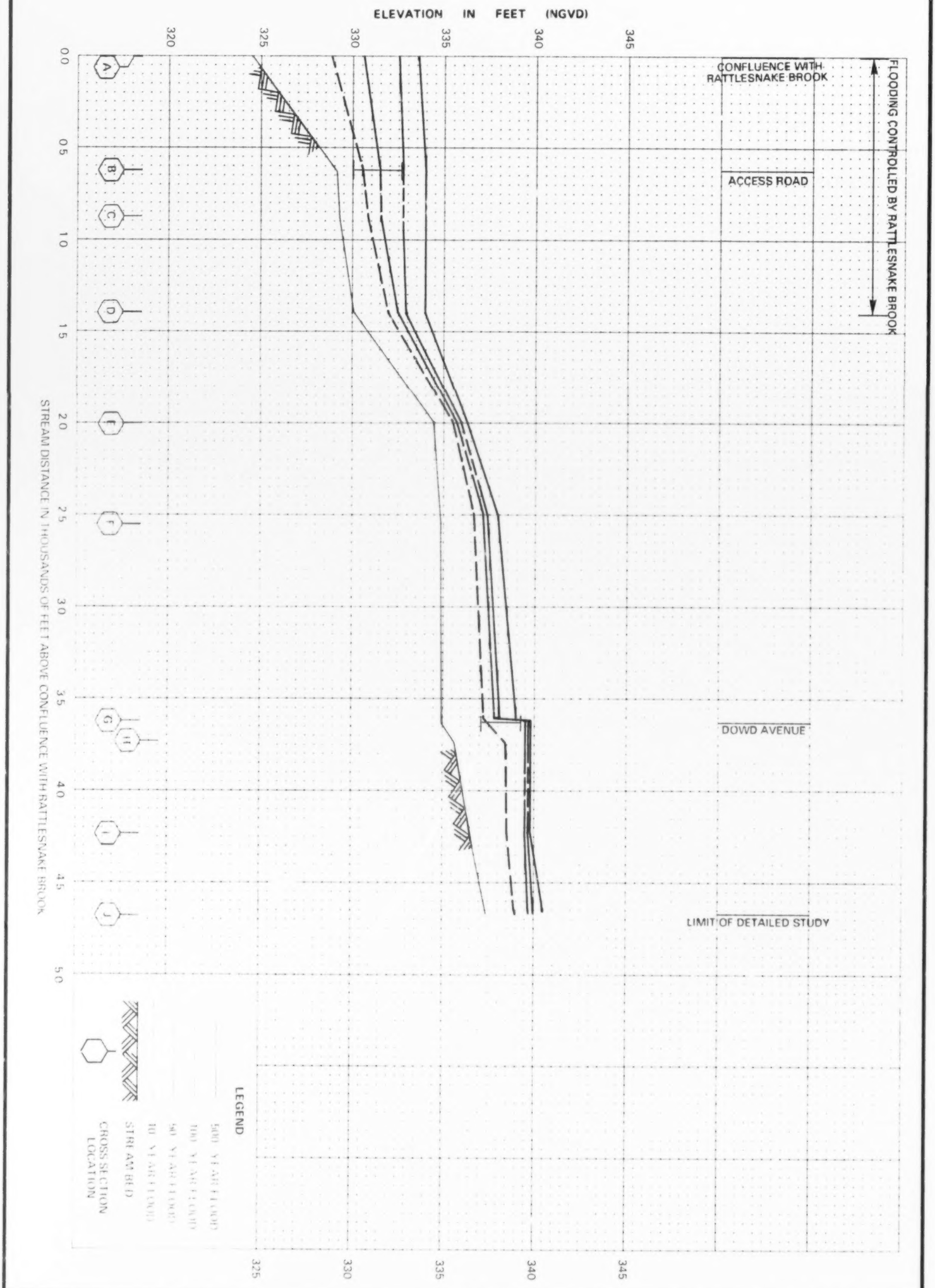
12P	FEDERAL EMERGENCY MANAGEMENT AGENCY TOWN OF CANTON, CT (HARTFORD CO.)	FLOOD PROFILES RATTLESNAKE BROOK



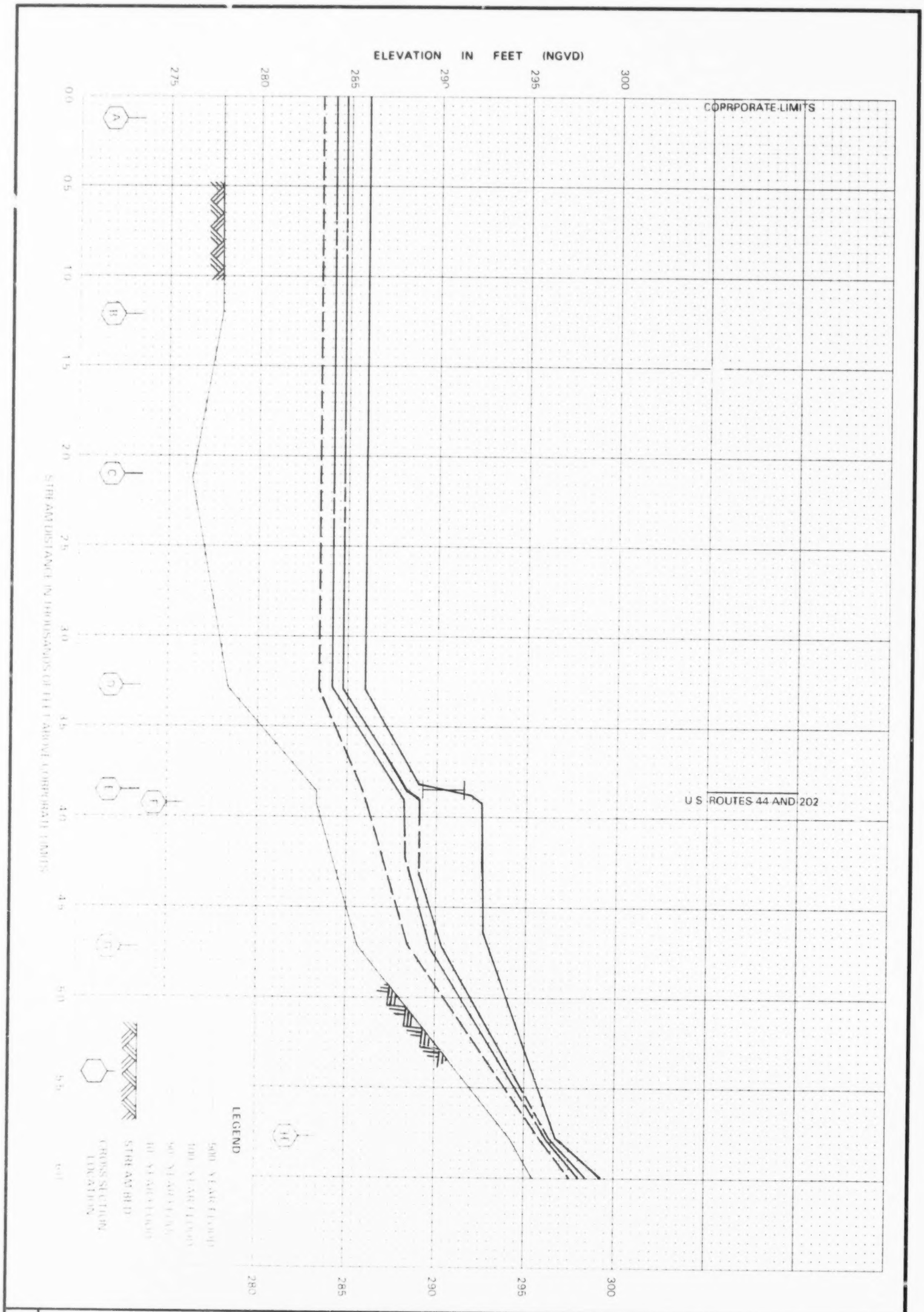
13P	FEDERAL EMERGENCY MANAGEMENT AGENCY TOWN OF CANTON, CT (HARTFORD CO.)	FLOOD PROFILES RATTLESNAKE BROOK



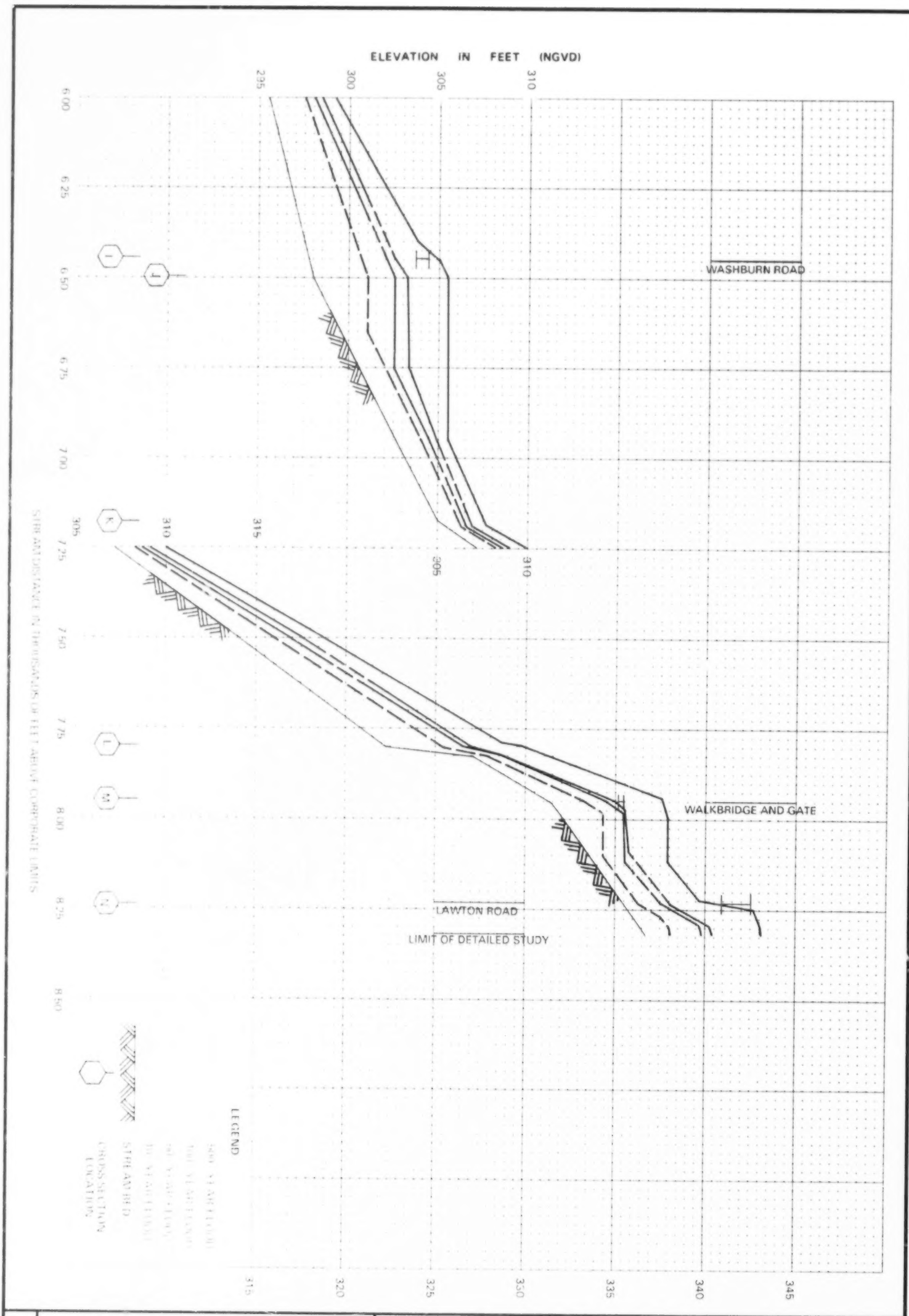
14P	FEDERAL EMERGENCY MANAGEMENT AGENCY TOWN OF CANTON, CT (HARTFORD CO.)	FLOOD PROFILES RATTLESNAKE BROOK



15P	FEDERAL EMERGENCY MANAGEMENT AGENCY TOWN OF CANTON, CT (HARTFORD CO.)	FLOOD PROFILES EAST BRANCH RATTLESNAKE BROOK

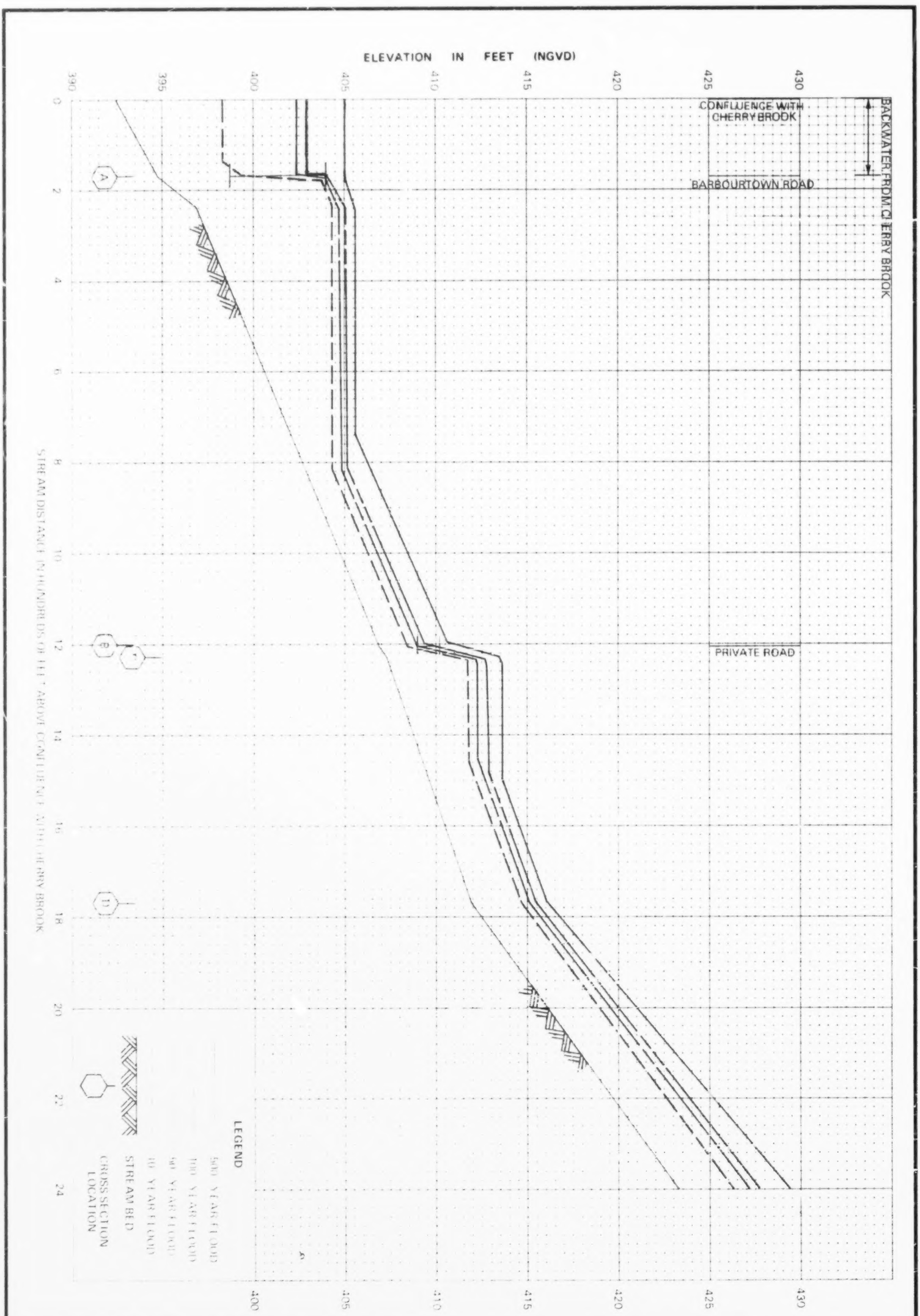


16P	FEDERAL EMERGENCY MANAGEMENT AGENCY TOWN OF CANTON, CT (HARTFORD CO.)	FLOOD PROFILES JIM BROOK

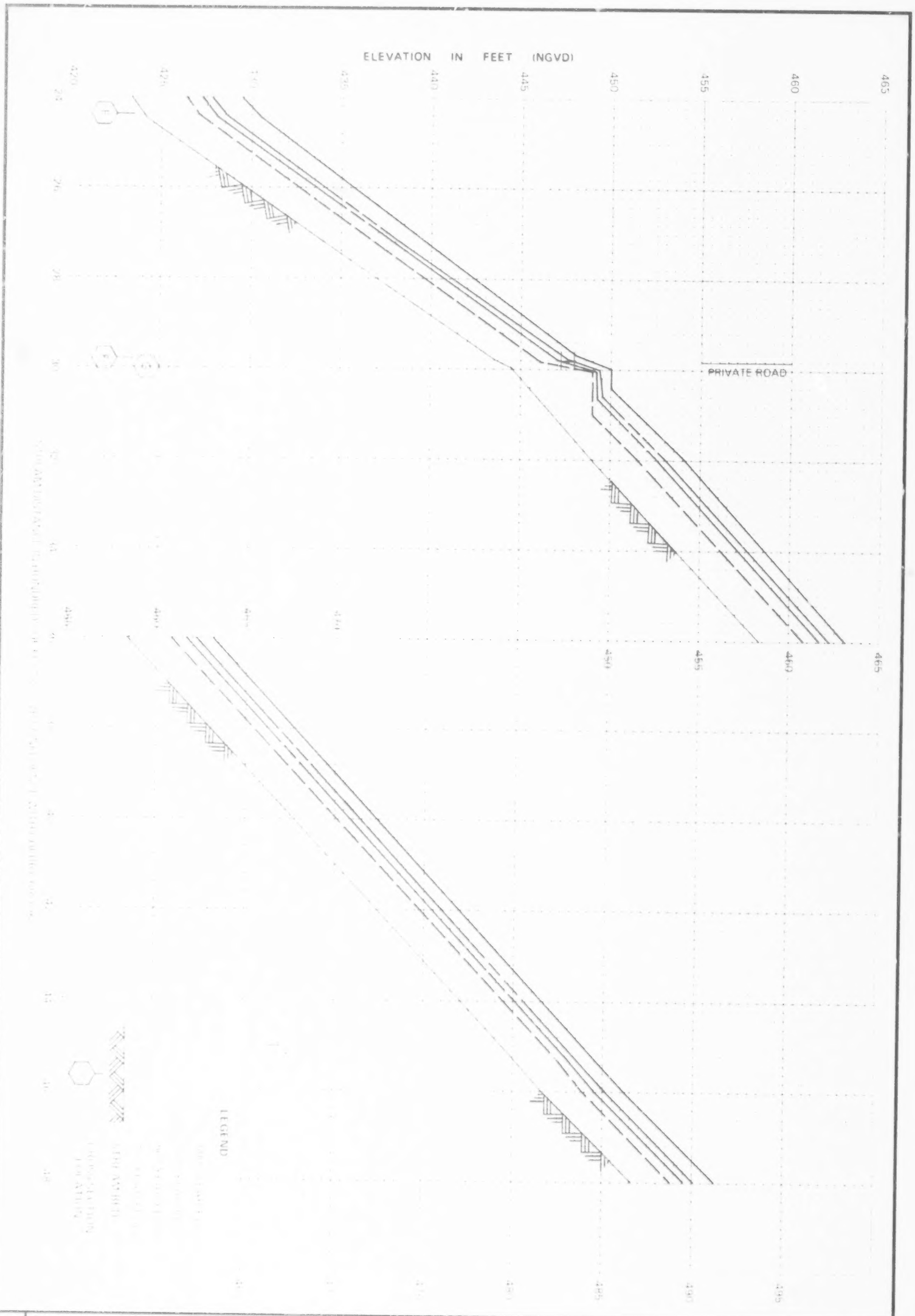


17P	FEDERAL EMERGENCY MANAGEMENT AGENCY TOWN OF CANTON, CT (HARTFORD CO.)	FLOOD PROFILES JIM BROOK

CONFLUENCE WITH CHERRY



18P	FEDERAL EMERGENCY MANAGEMENT AGENCY TOWN OF CANTON, CT (HARTFORD CO.)	FLOOD PROFILES BARBOUR BROOK



19P

TOWN OF CANTON, CT
(HARTFORD CO.)

FLOOD PROFILES

BARBOUR BROOK

FLOOD PROFILES

BARBOUR BROOK

TOWN OF CANTON, CT
(HARTFORD CO.)

20P